UC-NRLF
B 2 888 051

GIFT OF

SIGILLVM · VNIVERSITATIS · CALIFORNIENSIS
FIAT LVX
MDCCCLXVIII

EX LIBRIS

LIBRARY AGRICULTURE DEPT.

AGRIC.
LIBRARY

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

http://www.archive.org/details/workconductedate00bollrich

MINISTRY OF AGRICULTURE, EGYPT

TECHNICAL AND SCIENTIFIC SERVICE

[illegible] No. [illegible]

[illegible]

WORK CONDUCTED AT THE EXPERIMENTAL FARM AT GIZA

GREAT MILLET

SORGHUM VULGARE—DURRA HAVERA

OR

BEUSIM

SORGHUM ARUNDINACEUM—SUDANENSE

[illegible]

[illegible]

[illegible]

[illegible]

PRICE [illegible]

ORGANIZATION OF THE MINISTRY OF AGRICULTURE, CAIRO, EGYPT

[illegible]

TECHNICAL INSPECTORS

[illegible]

ADMINISTRATIVE AND STATISTICAL SERVICES

[illegible]

AGRONOMICAL SECTION

[illegible]

HORTICULTURAL SECTION

[illegible]

DOMAINS AND AGRICULTURAL SECTION, GIZA

[illegible]

CHEMICAL LABORATORY

[illegible]

COTTON GIN DISTRIBUTION

[illegible]

BUREAU OF COMMERCIAL INTELLIGENCE

[illegible]

VETERINARY SERVICE

[illegible]

SCHOOL OF VETERINARY MEDICINE

[illegible]

FUAD'S SCHOOL OF AGRICULTURE, GIZA

[illegible]

MINISTRY OF AGRICULTURE, EGYPT.

TECHNICAL AND SCIENTIFIC SERVICE

Bulletin No. 8.

(BOTANICAL SECTION.)

WORK CONDUCTED AT THE EXPERIMENTAL FARM AT GIZA

IN CONNECTION WITH

GREAT MILLET

(SORGHUM VULGARE - DHURA RAFI'A)

AND

BERSIM

(TRIFOLIUM ALEXANDRINUM - BERSIM),

BY

B. G. C. BOLLAND, B.A.,

BOTANIST TO THE MINISTRY OF AGRICULTURE.

(Submitted for Printing on April 11, 1916.)

CAIRO.

GOVERNMENT PRESS.

To be obtained, either directly or through any Bookseller, from the GOVERNMENT PRESS, Bulâq, and from the SALE-ROOM, Old Ismailia Palace, Sharia Qasr el Aini.

1916.

PRICE: P.T. 1.

MINISTRY OF AGRICULTURE, EGYPT.

(Bulletin No. 8.)

(BOTANICAL SECTION.)

WORK IN CONNECTION WITH MILLET IN 1915.

Work has been started on the different varieties of millet growing in the country with a twofold object:—

(1) To ascertain how many of the names given to millet denote separate varieties, and to write detailed descriptions of them.

(2) To improve the yield and quality of the crop by selection work and to isolate and breed pure varieties.

The following notes give the result of the work done in 1915.

The following varieties were sown between May 6 and 12:—

Variety.	Area.			Locality from where Seed was obtained.
	F.	Q.	S.	
Asfar	1	8	23	Qena.
„	1	8	17	Minia.
Qamhi...	0	15	21	Qena.
„	0	15	21	Minia.
Sabʿini...	1	20	3	Qena.
Tissʿini	1	8	7	„

The cultivation was normal and was the same for all the varieties.

For manure, nitrate of soda was applied at the rate of about ninety-five kilogrammes per feddân.

Sabʿîni was the first to mature and was cut on August 24, while the *Asfar* from Minia was not ready for cutting till October 9.

The following table shows the date of cutting and yield of grain in ardebs per feddân of the different varieties :—

Variety.	Date of Cutting.	Yield.	Number of Days taken in maturing.
Asfar from Qena	September 4	13·45	117
Qamhi „ „	„ 1	12·80	117
Tissᶜîni „ „	August 26	10·10	109
Sabᶜîni „ „	„ 24	8·40	110
Qamhi „ Minia	September 30	5·26	141
Asfar „ „	October 9	1·19	150

1 ardeb = 5·44 bushels = 155 kilogrammes.

The sparrows ate a large quantity of grain before it was ripe enough for cutting and so reduced the yield to a considerable extent; especially was that the case with the varieties which were the last to mature, namely *Asfar* and *Qamhi* from Minia.

Detailed observations were taken, but with the exception of the *Asfar* variety from Minia no distinct differences were noticeable.

The *Asfar* from Minia, besides taking a long time to mature, was a much bigger plant in every way than the other varieties.

It was four and a half metres in height, while the next highest variety was *Tissᶜîni*, which grew to three metres. The number and length and breadth of leaves were also much greater in that variety.

The following are short descriptions of the different varieties sown :—

Variety.	Maturity.	Colour of Grain.	Colour of Glumes when Ripe.	Head.
Sabᶜîni...	Early ...	White	Cream	Compact with a truncate top.
Tissᶜîni	„ ...	„	Cream, yellow, or black.	Loosely compact with a truncate top.
Qamhi...	Medium-Late.	White, dark-cream, or reddish	Light brown ...	Compact to loosely compact with a truncate top.
Asfar ...	Medium-Late.	Yellow	Brown	Loosely compact with rather an indistinct truncate top.

As will be seen, the different kinds are so mixed that no accurate description can be written, and further, in different localities different names are given to the same variety.

As with maize so with millet, a fresh start will be made by writing descriptions of and growing separately as many distinct "heads" as possible.

Millets from the Sudan.—Small samples of twenty-four distinct varieties were obtained from the Sudan and grown at Gîza last year, but no comparisons of yield were made, owing to the smallness of the samples.

The following particulars were recorded, and it is hoped that in 1917 a full description will be written of each variety and the yield determined.

Variety.	Maturity.	Colour of Grain.	Colour of Glumes when Ripe.	Weight of 100 Seeds in Grammes.	Other Notes taken when in Flower or before Harvesting.
1	Medium	Cream	Black	5·18	
2	Late ...	Orange	Deep claret ...	2·05	Panicle loose; pedicels and spikelets ciliate. Glumes reddish, hairy; nerves not very prominent except near the tip.
3	Medium	Light orange	Red brown ...	5·08	
4	Late ...	Light brick red.	Black	5·50	Panicle loose. Pedicels and spikelets slightly ciliate. Glumes yellowish green, nearly glabrous; prominently nerved towards the apex.
5	„ ...	Orange red ...	„	4·28	Similar to No. 4.
6	Early...	White	Light creamy brown.	2·72	Paniele loose Pedicels and spikelets ciliate. Glumes very large, hairy; greenish white; prominently nerved towards the apex.
7	Late ...	„	Black	5·50	Panicle loosely compact. Pedicels and spikelets ciliate. Glumes dull green, hairy; prominently nerved towards the apex.
8	Medium	Light cream	Deep claret ...	3·89	
9	„	Cream	Claret	3·73	
10	„	Light cream	Light cream...	4·20	Glumes covering the seed.
11	Late ...	Light brick red.	Yellow with a tinge of pink.	2·19	
12	Medium	White	Deep claret ...	3·96	
13	„	Light orange brown.	Nearly black	4·11	
14	„	Light cream	Cream	1·89	
15	„	Cream	Creamy brown	4·97	
16	Early...	White	Nearly black	2·55	
17	„	Brown red ...	Deep claret ...	3·46	
18	Medium	Light cream	Red brown ...	3·52	
19	Early...	„	Light red ...	2·29	
20	Medium	Creamy brown	Black	4·90	
21	„	Dark cream	Deep claret ...	4·00	
22	Early...	Light cream	Dark brown...	5·21	
23	„	Yellow	Deep claret ...	5·08	
24	„	Light claret	Brown red ...	1·74	Grain small.

WORK IN CONNECTION WITH *BERSIM* IN 1915.

Bersîm is the general term applied to four varieties of clover included under the specified name of *Trifolium alexandrinum*, a plant apparently of Egyptian origin and, as far as is at present known, peculiar in the richness of its crops, which are taken in the winter and throughout the spring.

Small plots of the four varieties, *Baʿli*, *Fahl*, *Khadrâwi*, and *Misqâwi*, were sown in November 1914 in order to ascertain the characteristic differences of each.

Fahl was found to exhibit a remarkably different appearance from the three others when planted with them and is readily recognized on account of its quicker and more luxuriant growth. *Misqâwi* and *Khadrâwi* have many common characteristics, and are rather better in growth than *Baʿli*, but they do not approach the same standard as the *Fahl* variety.

For determining the respective yields an area of four square metres was measured off in the centre of each of the twelve plots of the four varieties. The *bersîm* from the known area was cut by hand and weighed, the yields being as follows :—

Fahl	6·46	rotls per square metre.
Misqâwi	4·53	" " "
Khadrâwi	3·60	" " "
Baʿli	3·03	" " "

The forty-eight plots were arranged in chess-board fashion in order to eliminate any irregularities in the soil.

The following table shows the results of the observations which were taken on the height and leaves of the plant.

Variety.	Height. in Centimetres.	Number of Leaves per Plant.	Length of Leaves in Centimetres.	Breadth of Leaves in Centimetres.
Fahl	76·6	42	5·0	1·8
Misqâwi...	44·5	23	4·8	1·9
Khadrâwi	56·8	26	4·3	1·7
Baʿli	48·3	23	4·1	1·6

After the *bersîm* had been cut it was noticed that the *Fahl* variety had no fresh growth, while the other varieties had several new stems growing from the base of the main stem, thus enabling them to yield further cuttings.

From the above observations it seems obvious that, if one cutting only is required to be taken, *Fahl* is the variety to grow, the disadvantage of the latter being that the land does not obtain the benefit of a green manuring from the ploughing in of the source of a supply of humus.

To get over that difficulty and at the same time to get a higher yield than if *Misqâwi* alone were sown, a mixture could be made consisting of equal parts of *Fahl* and *Misqâwi*.

Fahl, besides having by far the largest number of leaves, has also the biggest leaves, while *Ba'li* is the least luxuriant of the four varieties. The seeds of the *Fahl* variety are larger than any of the others, so that it can also be distinguished by that character.

PUBLICATIONS OF THE MINISTRY OF AGRICULTURE.

"Agricultural Journal of Egypt." (English and Arabic.)

Vol. I, Part I.	Vol. III, Part I.
„ „ „ II.	„ „ „ II.
„ II, „ I.	„ IV, „ I.
„ „ „ II.	„ „ „ II.
	„ V, Parts I and II.

Egyptian Agricultural Products.

By Gerald C. Dudgeon, F.E.S., etc., Consulting Agriculturist.

No. 1 A. "The Great Millet" (*Durra Baladi* or *Durra Rafʿa*) in Egypt. (English.)

No. 2 A. "The Ground Nut or Earth Pea (*Fûl Sudâni*) in Egypt." (English.)

Technical and Scientific Bulletins.

No. 1. "Report on the First Two Years' Working of the Plant Protection Law." (Law No. 5 of 1913), by G. Storey, B.A., F.E.S. (English and French.)

No. 2. "The Nature of the Damage done by the Pink Boll Worm (*Gelechia Gossypiella* Saund.)," by Lewis Gough, Ph.D., F.E.S., etc. (English and French.)

No. 3 "Note on the Alkaloids of some Egyptian Solanaceæ," by Frank Hughes, F.C.S., Chemist. (English and French.)

No. 4. "The Life History of *Gelechia Gossypiella* from the Time of the Cotton Harvest to the Time of Cotton Sowing," by Lewis Gough, Ph.D., F.E.S., etc. (English.)

No. 5. "List of Egyptian Insects in the Collection of the Ministry of Agriculture," by G. Storey, B.A., F.E.S. (English.)

No. 6. "Note on a Machine to kill *Gelechia* Larvæ by Hot Air, and the Effects of Heat on *Gelechia* Larvæ and Cotton Seed," by Lewis Gough, Ph.D., F.E.S., etc. (English.)

No. 7. "Work in Connection with Egyptian Wheat," by G. C. Dudgeon, F.E.S. and B. G. C., Bolland, B.A., Botanist. (English.)

No. 8. "Work conducted at the Experimental Farm at Gîza in Connection with Great Millet and *Bersîm*," by B. G. C. Bolland, B.A., Botanist. (English.)

No. 9. "Work in Connection with Egyptian Maize," by Gerald C. Dudgeon, F.E.S., Consulting Agriculturist, etc., and B. G. C. Bolland, B.A., Botanist. (English.)

No. 10. "Some Tests of Flour made from Egyptian Wheat," by Frank Hughes F.C.S., Membre de l'Institut Egyptien, Chemist. (English.)

Leaflets of the Horticultural Section. (English and Arabic.)

By T. W. Brown, Director, Horticultural Section.

(*No number*) "Citrus Trees."
No. 1. "French beans (*Fasoolia*)."
„ 2. "Asparagus (*Kishk Almaz*)."
„ 3. "Preservation of Dates."
„ 4. "Egyptian Arum (*Qolqas*)."
„ 5. "Cultivation of Potatoes."
„ 6. "Preservation of Apricots."
„ 7. "Custard Apple."

Collections of Agricultural Circulars.

From No. 1-18. (English and Arabic.)
„ „ 19-35. „ „
„ „ 36-60. „ „

Laws and Regulations.

"Regulations of the Boll Worm and Seed Worm Campaign, 1915." (English and Arabic.)
"Regulations of Cotton Worm Campaign, 1915." (English and Arabic.)
"Regulations of Cotton Worm Campaign, 1916." (English and Arabic.)
"Collection of the Agricultural Laws." (French and (Arabic.)
"Collection of Veterinary Laws." (French and Arabic.)
"Syllabus of the School of Veterinary Medicine." (Arabic and French.)
"Syllabus of the Intermediate School of Agriculture, Moshtohor." (English and Arabic.)

Administrative Reports.

"Annual Report of the Veterinary Service, 1913." (English and Arabic.)
"Annual Report of the Veterinary Service, 1914." (English and Arabic.)
"Report on the Great Invasion of Locusts in Egypt in 1915." (English and Arabic.)

Egyptian Agricultural and Veterinary Notes.

"Wheat Rust." (English and Arabic.)
"Wheat Smut." (English and Arabic.)
"Pamphlet on Ticks and their Relation with Agricultural Animal Diseases." (Arabic.)
"Pamphlet on Scale Insects." (Arabic.)

Books.

"Agricultural Text Book," Part I. (English and Arabic.)
"Agricultural Text Book," Part II. (English and Arabic.)
"Percival's Botany." (Translation.) (Arabic.)
"Inorganic Chemistry." (Translation.) (Arabic.)
"Agricultural Chemistry," by Ingle. (Translation.) (Arabic.)
"Veterinary Medicine for Intermediate Schools of Agriculture." (Arabic.)

Govt. Press 1056-1916-1030 ex.

7 DAY USE
RETURN TO DESK FROM WHICH BORROWED

AGRICULTURE LIBRARY
40 Giannini Hall - Tel. No. 642-4493
This publication is due on the LAST DATE
and HOUR stamped below.

JUN - 5 1971

NOV 14 1985

received in
Natural Resources Library

NOV 20 1985

PHOTOCOPY JUL 6 '88

NOV 20 1989

DEC 27 1989

RB 17-50m-3,'70
(N5381s10)4188-A-32

General Library
University of California
Berkeley

YE 18904